

APPENDIX N

MILITARY VEHICLE AXLE WEIGHT DISTRIBUTION FORMULAS AND PERCENTAGES*

Vehicle weight scales are not always available to military field units that are moving truck convoys over CONUS public highways. Therefore, the Army has developed loaded-vehicle axle weight distribution formulas and percentages to help units prepare DD Forms 1265 and 1266. Percentages of maximum GVW are given for estimating the axle weight distribution for a loaded vehicle. Whenever possible, units should use actual axle loads obtained by weighing the loaded vehicle.

N-1. LIMITATIONS. Percentages can be used for any loaded cargo truck and tractor-semitrailer combination. However, to determine vehicle axle load distribution, the following must be available:

- TMs or vehicle data sheet for the particular cargo truck, tractor, and semitrailer.
- Weight of empty vehicle.
- Weight of payload.
- Other necessary dimensions obtained from vehicle TM or data sheet.

N-2. PROCEDURE. Follow these steps to determine axle weight distribution using the percentages in this appendix:

Step 1. Determine GVW.

Step 2. Choose applicable percentages from the table for the number of axles and type of vehicle (see Table N-1, page N-2).

Step 3. Multiply GVW by each percentage to determine various axle weight distributions.

Step 4. Record each weight.

Example: The percentage method. The GVW for an M123/M172A1 tractor-semitrailer combination is 96,500 pounds. This is a five-axle vehicle. Therefore, in the first column labeled "Number of Axles per Vehicle," find 5. To the right of 5 under "Type of Vehicle" is semitrailer and under the "Axle 1" column is 14. Multiply the GVW by 14 percent to find the front axle weight distribution. The "Axle 2" and "Axle 3" columns show 21 percent. Multiply the GVW by 21 percent to determine the weight distribution on each of the second and third axles. The "Axle 4" and "Axle 5" columns show 22 percent. Multiply the GVW by 22 percent to determine the weight distribution on each of the fourth and fifth axles. Record each axle weight distribution.

GVW for M123/M172A1 = 96,500 lb

GVW = 96,500 lb x 14 percent = 13,510 lb (front axle weight distribution)

GVW = 96,500 lb x 21 percent = 20,265 lb (2d and 3d axle weight distribution)

GVW = 96,500 lb x 22 percent = 21,230 lb (4th and 5th axle weight distribution)

*Formulas and percentages in this appendix (see Table N-1 and Figure N-1, page N-3) are used in lieu of ATA weight limits only when ATA data (see Appendix E) is not available.

Table N-1. Percentages for axle weight distribution

Number of Axles per Vehicle	Type of Vehicle	Axle 1	Axle 2	Axle 3	Axle 4	Axle 5	Axle 6
3	1 1/4-ton	.38	.31	.31			
	2 1/2-ton	.32	.34	.34			
	5-ton	.26	.37	.37			
	10-ton	.24	.38	.38			
5	Semitrailer	.14	.21	.21	.22	.22	
6	Semitrailer	.08	.22	.22	.16	.16	.16

CARGO TRUCK

To find the axle weight distribution on the bogie:

$$\frac{W_2 - W_T(X_1) + W_L(X_2)}{X_3}$$

When vehicle has a bogie axle, divide W_2 by 2 to find the axle weight distribution for each axle.

$$W_1 = W_T + W_L - W_2$$

SEMITRAILER

To find the axle weight distribution on the bogie:

$$\frac{W_2 - W_T(X_1) + W_L(X_2)}{X_3}$$

Divide W_2 by the number of axles to find axle weight distribution for each axle.

$$W_K = W_T + W_L - W_2$$

NOTE: Apply W_K to tractor-truck formulas.

TRUCK TRACTOR

To find the axle weight distribution on the bogie:

$$\frac{W_2 - W_{TR}(X_1) + W_K(X_2, X_3)}{X_3}$$

Divide W_2 by 2 to find axle weight distribution for axles 2 and 3.

To find axle weight distribution on the front bogie:

$$W_1 = W_{TR} + W_K - W_2$$

LEGEND

W_1 = wt on axle 1	W_T = wt of trailer	W_{TR} = wt on truck
W_2 = wt on axle 2	W_K = wt on king pin	W_L = wt of load
C_L = center of load		